

## STUDIES ON HYDROPORUS

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Fall (Bull. Brooklyn Ent. Soc. XXVII, 1932, p. 145) points out the close affinity of *Hydroporus brodei* Gellermann and *H. quadrimaculatus* Horn. We were misled in the placing of *brodei* by the inaccuracies of Fall's treatment of *quadrimaculatus* (Rev. N. A. species *Hydroporus* and *Agaporus*, 1923, p. 112, 117). If that author had examined the metacoxae of *quadrimaculatus*,—which he writes me he had not done,—the impropriety of placing the species in a group with the "mesial line between the posterior coxal processes more or less abbreviated behind" would at once have become apparent. The mesial line is really acutely triangularly produced, its apex surpassing the level of the lateral metacoxal process. I am convinced, however, that rather than erect a new group for it it is better to expand Zimmermann's (Arch. Naturg. 83, A, 1917 (1919), p. 183-184, fig. 17) subgenus *Deronectes* s. str. This is a group hitherto unknown from America. The old world species of *Deronectes* s. str., however, have the mesial line of the metacoxae prominent but not surpassing the level of the lateral metacoxal processes. The characters of the subgenera of *Hydroporus* (sensu Fall) are set forth in the following key.

## KEY TO THE SUBGENERA OF HYDROPORUS (SENSU FALL)

- A<sup>1</sup>. Lateral process of metacoxae narrower than the common median portion that may or may not be lobed
- B<sup>1</sup>. Apex of metacoxae truncate or nearly so; Holarctic  
subg. *Hydroporus* (s. str.)
- B<sup>2</sup>. Median metacoxal line prominent; Nearctic  
subg. *Heterosternus* Zimm.
- A<sup>2</sup>. Lateral processes of metacoxae wider than the common median lobe which may be entirely obsolete
- B<sup>1</sup>. Scutellum invisible
- C<sup>1</sup>. Median metacoxal line prominent
- D<sup>1</sup>. Apex of prosternum narrow, more or less carinate; Palaearctic, Nearctic (Pacific Coast)  
subg. *Deronectes* Sharp
- D<sup>2</sup>. Apex of prosternum broad, not carinate;  
Europe . . . . . subg. *Stictotarsus* Zimm.
- C<sup>2</sup>. Median metacoxal line abbreviated
- D<sup>1</sup>. Venter opaque, densely micropunctulate; pronotum without longitudinal foveae at sides;

- metafemora densely punctate at least in part;  
Holarctic, Ethiopian, Oriental, Central  
America (*Potamodytes* Zimm., *Deronectes*  
Fall) . . . . . subg. *Potamonectes* Zimm.
- D<sup>2</sup>. Venter shining, not densely micropunctulate;  
metafemora with only a few seta-bearing  
punctures
- E<sup>1</sup>. Length 2.5–5 mm., the smaller species  
broadly oval or subrotundate; pronotum  
usually longitudinally foveate at sides,  
vaguely transversely impressed towards  
base; Holarctic . . subg. *Oreodytes* Seidl.
- E<sup>2</sup>. Length 2–3.5 mm., usually under 3 mm.,  
elongate oval; pronotum with or  
without longitudinal foveae at sides,  
base not transversely impressed;  
Palearctic
- F<sup>1</sup>. Upper surface microreticulate; form  
narrower . . subg. *Graptodytes* Seidl.
- F<sup>2</sup>. Upper surface punctulate; form  
broader . . subg. *Stictonotus* Zimm.
- B<sup>2</sup>. Scutellum visible at apex; Ethiopian  
sub. *Nebrioporus* Reg.

### **Hydroporus (*Potamonectes*) *mathiasi* sp. nov.**

Elongate oval; above straw colored; head black with testaceous anterior margin forming an angle between eyes and testaceous transverse frontal spot; pronotum with black or rufous apical and basal markings which fuse more or less broadly on disc with exception of a longitudinal straw colored median spot; elytra with six more or less interrupted and semiconfluent rufous vittae on a straw colored background, with two feebly impressed discal series of punctures; margin without subapical tooth. Dorsum finely densely punctate, virtually glabrous, microreticulate. Venter black, densely micropunctulate, the legs and mouthparts and epipleurae pale. Mesocoxae very narrowly separated.

Type and seven paratypes: Austin Pass Lake, Mt. Baker, Washington, VIII–13–1932. T. Kincaid (in collection of author). Nine paratypes variously from Queets Basin, Olympic Mts., F. W. Mathias; Paradise Park (Robert Flock) and Tipsoo Lake (M. C. Lane), Mt. Rainier, the latter in Mr. Lane's collection.

The glabrous dorsum and faded out dorsal markings distinguish this species from *griseostriatus* DeG. and related species in Fall's key (*l.c.*, p. 100). The elytral punctures may possibly be set with extremely short and minute setae.

I name this species in honor of Mr. F. W. Mathias of Hoquiam, Washington, who presented me with my first specimen of the species in 1928. It is an interesting Alpine type, apparently confined to small mountain lakes at an elevation of about 5000 feet.

The subgenus *Oreodytes* Seidl.

Twenty-two of the twenty-three species of the subgenus *Oreodytes* are set forth in the following key. Of these I have seen specimens of all but six: *bisulcatus* Fall, *picturatus* Horn, *laevis* Kby., *recticollis* Fall, and *alaskanus* Fall. *Dauricus* Mots. from Siberia is omitted. For literature see Seidlitz, Verh. Nat. Ver. Brünn XXV, 1886, p. 57-59; Zimmermann *l.c.*, p. 190-192; Fall *l.c.*, p. 112-121 and Pan-P. Ent. II, 1926, p. 138-141; Hatch, Bull. Brook. Ent. Soc. XXIII, 1928, p. 220-222.

The members of this subgenus are primarily inhabitants of running water or live in pools and eddies immediately adjacent thereto. The group is particularly developed along the Pacific coast of North America where fifteen of the twenty-three known species occur.

KEY TO SPECIES OF OREODYTES SEIDL.

- 1 Epipleura impressed at base for reception of apex of meso-femur
- 2 Form elongate oval
- 3 Pronotum narrower than elytra at base; elytra nearly glabrous
- 4 Epipleura black or slightly paler towards its outer anterior angle; length 3.4-4 mm.; dark band along inner margin of eye usually more distinct.
- 5 Discal series of punctures moderately impressed; elytra nigro-lineate or with the markings more or less fused; scattered punctures of elytra coarse and evident or nearly obsolete; B. C. and Newfoundland to N. H., N. Y., n. Mich., Idaho, and Wash. (*septentrionalis* Fall nec Gyll.) . . . *scitulus* Lec.
- 5' Discal series of punctures more strongly impressed; Cal. *bisulcatus* Fall.
- 4' Epipleura pale; dark band along inner margin of eye feeble or broken; elytra nigrolineate or (ab. *devillei* Rég.) nearly uniform black; length 2.6-3.3 mm.; central and northern Europe, Siberia . . . . . *septentrionalis* Gyll.
- 3' Pronotum as wide as elytra, not foveate at sides; elytra evidently pubescent; length 4-4.5 mm.; central Europe, Mediterranean . . . . . *halensis* F. and varieties.
- 2' Form broadly oval
- 6 Elytra without sutural series of punctures

- 7 Elytra nigrolineate, the markings frequently more or less fused
- 8 Sides of metacoxae coarsely punctate; scattered punctures of elytra evident; disc of pronotum with a single transverse fascia or with the entire disc more or less obscurely piceous; length 3-3.15 mm.; Mont., Utah, Wash.  
*crassulus* Fall.
- 8' Sides of metacoxae finely punctate
- 9 Elytra with scattered punctures
- 10 Disc of pronotum with at most a single transverse fascia; scattered punctures of elytra very small and obscure
- 11 Scattered punctures of elytra larger and sparser, confined to the vicinity of the suture; the two impressed elytral series of punctures evident; length 2.7-2.95 mm.; width 1.6-1.85 mm.; Cal. to B. C. .... *obesus* Lec.
- 11' Scattered punctures of elytra very small, almost invisible, and evenly distributed; impressed series of dorsal punctures nearly obsolete; forms with the markings expanded or reduced constitute the ab. *rivalis* Gyll. and ab. *alienus* Sharp respectively; length 3 mm., width 1.8 mm.; central and northern Europe, Siberia ..... *sanmarki* Sahlb.
- 10' Disc of pronotum with two transverse fasciae; scattered punctures of elytra more evident; length 2.8 mm., width 1.15 mm.; Wash. .... *angustior* Hatch.
- 9' Elytra without scattered punctures; the two impressed series of elytral punctures evident; length 2.6-2.85 mm., width 1.5-1.75 mm.; N. M. and Ariz. to Mont., Alta., B. C., and Wash. .... *congruus* Lec.
- 7' Elytra not nigrolineate
- 12 Above and below more numerous and coarsely punctate; pronotum narrower at base than elytra; posternal and metasternal process broader; length 3-3.3 mm.; Cal., Wash.  
*abbreviatus* Fall.
- 12' Above and below more sparsely and finely punctate; pronotum as broad as elytra at base; prosternal and metasternal process narrower; length 2.85-3 mm.; Nev., Cal.  
*picturatus* Horn.
- 6' Elytra with impressed sutural series of punctures, not nigrolineate, without scattered punctures; length 3.3 mm.; Cal., Wash. .... *subrotundus* Fall.
- 1' Epipleura not impressed at base for reception of mesofemur; form elongate oval
- 13 Elytral apex not dentate in either sex
- 14 Pronotum narrower at base than elytra; epipleura black; elytra at apex pale or (ab. *montanus* Zimm.) black; length 4-4.5 mm.; central and northern Europe ... *borealis* Gyll.
- 14' Pronotum as wide at base as elytra; epipleura pale; elytra

- very obscurely vitto-maculate; length 3.8 mm.; Wash.  
*snoqualmie* sp. nov.
- 13' Elytral apex externally dentate in female
- 15 Last ventral segment of female without a broad deflexed apical process
- 16 Elytra evidently punctate; epipleura pale; pronotum broader at base than at middle, the sides evenly arcuate; female elytral dentation subrectangular to spinose
- 17 Length 4.5 mm.; narrower; n. Europe . . . . .*alpinus* Payk.
- 17' Length 5.5 mm.; broader; B. C., Wash. . . . .*hortense* sp. nov.
- 16' Elytra very obscurely punctate
- 18 Epipleura pale; black markings of dorsal surface more restricted; pronotum pale with a more or less interrupted transverse basal fascia
- 19 Protarsal claws similar in sexes; sides of pronotum nearly straight; length 3.8-4.35 mm.; Lake Superior, Hudson Bay Terr. (*duodecimlineatus* Lec.) . . . . .*laevis* Kby.
- 19' Male protarsal claws thicker; female elytral tooth somewhat obtuse; sides of pronotum variable; length 4.4-5 mm.; Calif., Y. T. (*yukonensis* Fall, *recticollis* Hatch nec Fall)  
*semiclarus* Fall.
- 18' Epipleura black; black markings of dorsal surface heavier, the pronotum diffusely clouded with the margins and a central median line pale; sides of pronotum straight and parallel in at least basal half; female elytral tooth nearly rectangular; length 4.8-5.2 mm.; Alaska . . .*recticollis* Fall<sup>1</sup>
- 15' Last ventral segment of female with a broad deflexed apical process; female elytral tooth obtuse
- 20 Epipleura pale; dorsum finely sparsely punctate; female abdominal process broadly truncate; male protarsi somewhat broader than in female; sides of pronotum nearly parallel behind middle; length 4.5-5.3 mm.; Alaska  
*alaskanus* Fall.
- 20' Epipleura black; dorsum evidently moderately closely punctate; female abdominal process bilobed and more or less notched at apex; male protarsi not broader than in female; shape of thoracic side margin and elytral apex variable; length 4.75-5.5 mm.; Wash. (*kincaidi* Hatch)  
*raineri* Hatch.

<sup>1</sup>Apparently close to *recticollis* Fall is *dauricus* Mots. from Siberia. It approaches it in having the female elytra dentate, the epipleura black, the elytra finely punctate, the elytral vittae with a tendency to confluence. It is apparently distinguished by its three strongly impressed series of dorsal punctures. The other species with the female elytra dentate have the series of dorsal punctures nearly or quite unimpressed and very inconspicuous. See Motschulsky, L'Abeille XVI, 1878, p. 61; Zimmermann, Arch. Naturg. 83 A, 1917 (1919), p. 190.



*H. scitulus* Lec.—I have followed Zimmermann in separating this species from *septentrionalis* Gyll., but Fall may really be justified in his contention that, in the last analysis, the two are inseparable. I have seen no American specimen, however, in which the epipleura are as nearly entirely pale as in those from Europe.

There is certainly some evidence of the splitting up of this species into local races in Washington. A series recently taken on the Naches River in eastern Washington is uniformly less evidently punctate with some specimens exhibiting a pale area on the epipleura and the partial disintegration of the dark band along the inner margin of the eye, in all these respects approaching typical *septentrionalis* and differing from the form found in western Washington and along the Columbia River at Plymouth. The specimens Fall (*l.c.*, p. 115) cites from British Columbia and Idaho may belong to this Naches River race.

#### **H. snoqualmie** sp. nov.

Oblong oval, the outline feebly notched at base of pronotum and at eyes. Above virtually glabrous, finely microreticulate, the head and pronotum finely and densely, the elytra more coarsely and more sparsely punctate, the pronotum with larger punctures toward the base and apex. Head pale with an oblique dark band on either side of the front which bands fuse with a median dark spot towards the base of the head. Pronotum as wide as elytra at base, with a distinct short longitudinal fold on either side, broadest at base, the side margins arcuate, narrowed from or from slightly before base, with sides and a median spot pale, the disc more or less extensively dark; the dark areas may or may not attain the apical and basal margins. Elytra with two more or less feebly impressed discal series of punctures, pale, marked with about six entire discal and one or two interrupted marginal pale brown or brownish black vittae; apex not or very feebly sexually dimorphic. Epipleura of elytra pale, the basal portion not excavated for reception of the meso-femora. Below pale brownish, the thoracic plates and the metacoxae somewhat darker. Length 3.8 mm.

Type: North Bend (Maloney's Grove), Wash., May 10, 1930, M. H. Hatch (in collection of author). 69 paratypes from North Bend (Maloney's Grove), Green River Gorge (King Co.), Mt. Rainier (Green Water River), and Austin Pass Lake, Mt. Baker, all in western Washington.

**H. hortense** sp. nov.

Oblong oval. Above glabrous, microreticulate; the head and pronotum finely, the elytra evidently punctate. Head pale with an oblique dark band on either side of the front which fuse with a median dark spot towards base. Pronotum narrower at base than elytra, with a distinct short longitudinal fold on either side, broadest at base, the side margins feebly arcuate. Pronotum pale with a more or less interrupted black basal fascia, the apical and basal margins sometimes black. Elytra pale with six entire black discal and one or two interrupted lateral vittae, the apex very feebly obliquely sinuate (♂) or strongly and subrectangularly to spinosely dentate, the margin sinuate on both sides of the tooth (♀). Epipleura pale, not excavated at base for reception of mesofemora. Below black, the appendages pale except for the basal portions of the femora, which are dark. Terminal abdominal segment not modified in female.

Type ♀, allotype ♂, and 13 paratypes: North Bend (Maloney's Grove), Wash. July 14, 1930, M. H. Hatch (in collection of author). 13 paratypes same data as type taken on May 10 and June 29, 1930. One paratype: Barkerville, B. C. IX-9-1929, Hortense Griffin.

I take great pleasure in naming this beautiful little species for Mrs. Hortense Griffin Lanphere, a student at the University of Washington, who has contributed numerous specimens of Coleoptera to my cabinet and who presented me with my first specimen of this species in 1929.

*H. semiclarius* Fall (*yukonensis* Fall, *recticollis* Hatch nec Fall).

My short series of specimens from Yukon Crossing is so variable that I am compelled to adopt Fall's original surmise that *semiclarius* and *yukonensis* are identical. My series range in size from 4.4 to 4.75 mm. and the side margin of the pronotum varies from practically straight to such a strongly arcuate condition that I was led to identify some of the specimens erroneously with *recticollis*.

*H. rainieri* Hatch (*kincaidi* Hatch).

A series of seventy-five specimens, nearly all from the type locality, shows that *kincaidi* is an untenable species. The characters on which it was founded (the divergent posterior pronotal angles, the feebler development of the character of the elytral apex, and the absence of notching of the female abdominal process) occur in every degree of development and in every possible combination.